

What is claimed is:

1. A focal length measuring device comprising:
 - a light source unit for generating a collimated light;
 - a light deflecting unit for deflecting the collimated light;
 - a light receiving unit which is disposed opposite to the light source unit so as to sandwich the light deflecting unit; and
 - wherein the light receiving unit is disposed near a rear focal plane of an optical element to be tested; and
 - the light receiving unit outputs an information for calculating a focal length of the optical element to be tested.
2. A focal length measuring device according to Claim 1 wherein the light deflecting unit is disposed near a front focal plane of the optical element to be tested.
3. A focal length measuring device comprising:
 - a light source unit for generating a collimated light;
 - a light deflecting unit for deflecting the collimated light; and
 - a light receiving unit which is disposed opposite to the light source unit so as to sandwich the light deflecting unit; and
 - wherein the light deflecting unit is disposed near a front focal plane of the optical element to be tested; and
 - the light receiving unit outputs a position information for calculating the focal length of the optical element to be tested.

4. A focal length measuring device according to any one of Claims 1 or 3 further comprising:
 - a calculating unit
wherein the calculating unit is provided with a calculating process for calculating a focal length of the optical element to be tested according to the position information.
5. A focal length measuring device according to Claim 4 wherein
the position information includes a position information based on a first light
under condition that the first light reaches at the light receiving unit after the first
light is deflected to a first direction by the light deflecting unit.
6. A focal length measuring device according to Claim 5 wherein
the position information includes a position information based on a position of
the light which reaches at the light receiving unit
under condition that the light deflecting unit is not provided.
7. A focal length measuring device according to Claim 5 wherein
the position information includes a position information based on a second light
under condition that the first light reaches the light receiving unit after the first
light is deflected to a second direction which is different from the first direction by the
light deflecting unit.
8. A focal length measuring device according to Claim 1 wherein
the light deflecting unit is a diffraction grating.

9. A focal length measuring device according to Claim 1 further comprising:
 - a supporting unit for supporting the optical element to be tested,
wherein the supporting unit is disposed between the light deflecting unit and the light receiving unit.
10. A focal length measuring device according to Claim 1 further comprising:
 - a double telecentric optical system,
wherein the double telecentric optical system is disposed between the supporting unit and the light receiving unit.
11. A focal length measuring device according to Claim 1 wherein
the light receiving unit is an image-pickup element.
12. A focal length measuring device according to Claim 1 further comprising:
 - a moving unit,
wherein the moving unit can move the light receiving unit in a plane orthogonal to an optical axis of an optical path formed between the light source unit and the light receiving unit.
13. A focal length measuring device according to Claim 1 wherein
the light receiving unit is provided with a pin hole.
14. A focal length measuring device according to Claim 13 wherein
the light receiving unit is provided with a light receiving element and at least a

lens, and

the lens is disposed such that the light receiving element and the pin hole conjugates.

15. A focal length measuring device according to Claim 1 wherein
a deflection angle θ ($^{\circ}$) by the light deflecting unit satisfies a condition such as
 $\sin \theta < 0.1$.

16. A focal length measuring device according to Claim 1 wherein
the light source unit includes a collimating optical system.